

Applicant : Nolan et al.  
Patent No. : 6,201,162  
Issued : March 13, 2001  
Serial No. : 09/392,869  
Filed : February 23, 2001  
Page : 4

Attorney's Docket No.: 11112-002001

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-- 27. (New) The catalytic complex of claim 14, wherein the complex is linked to a solid support by means of a link between said anionic ligand and said solid support.--

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-- 38. (New) The catalytic complex of claim 14, wherein the complex is linked to a solid support by means of a link between said nucleophilic carbene and said solid support.--

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#### REMARKS

Claims 9-21, and 23-38 are pending. The Examiner has previously indicated that the claims 9-21 are allowable as written, and that claims 23-26 would be allowable if rewritten so as not to depend from rejected base claims. Therefore, originally filed dependent claims 23 and 25 have been rewritten to be allowable independent claims. For example, amended claim 23 is intended to be, and is believed to be, originally filed independent claim 22 with the limitations of originally filed claim 23 added. Similarly, amended claim 25 is intended to be, and is believed to be, originally filed independent claim 22 with the limitations of originally filed claim 25 added. New claims 27-38 correspond to originally filed claims 2-7, but have been rewritten to depend from allowable independent claims 9 and 14. No new matter is introduced with the amendments or new claims.

Attached is a marked-up version of the changes being made by the current amendment.

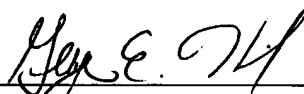
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Page : 5

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Applicant asks that all claims be allowed. Please apply any charges or credits to Deposit Account No. 06-1050, with reference to Attorney Docket No. 11112-002001.

Respectfully submitted,

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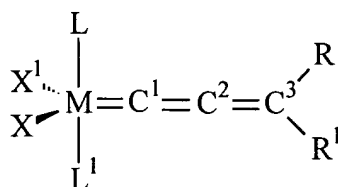
**Version with markings to show changes made**

In the claims:

Claims 1-8 and 21 have been cancelled without prejudice.

Claims 23 and 25 have been amended as follows:

-- 23. (Amended) [The method of claim 22] A method of performing ring closing metathesis, said method comprising contacting a diterminal diene with a catalytic complex under conditions appropriate, and for a time sufficient to produce a cyclic alkene, wherein the catalytic complex has the formula:



wherein M is Os or Ru;

C<sup>1</sup>, C<sup>2</sup> and C<sup>3</sup> are sp<sup>2</sup>-hybridized carbons, wherein either or both of C<sup>1</sup> and C<sup>2</sup> are optionally absent;

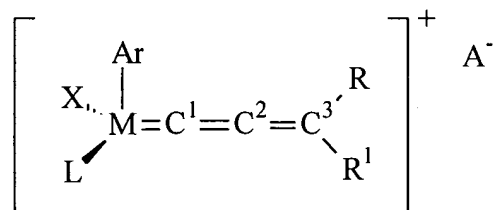
R and R<sup>1</sup> are independently selected from the group consisting of hydrogen, C<sub>1</sub>-C<sub>20</sub> alkyl, C<sub>2</sub>-C<sub>20</sub> alkenyl, C<sub>2</sub>-C<sub>20</sub> alkynyl, C<sub>2</sub>-C<sub>20</sub> alkoxycarbonyl, aryl, C<sub>1</sub>-C<sub>20</sub> carboxylate, C<sub>1</sub>-C<sub>20</sub> alkoxy, C<sub>2</sub>-C<sub>20</sub> alkenyloxy, C<sub>2</sub>-C<sub>20</sub> alkynyloxy, or aryloxy, each R and R<sup>1</sup> optionally being substituted with C<sub>1</sub>-C<sub>5</sub> alkyl, halogen, C<sub>1</sub>-C<sub>6</sub> alkoxy, or with a phenyl group substituted with halogen, C<sub>1</sub>-C<sub>5</sub> alkyl or C<sub>1</sub>-C<sub>5</sub> alkoxy;

X and X<sup>1</sup> are independently selected from the group consisting of anionic ligands;  
and

L and L<sup>1</sup> are selected from the group consisting of nucleophilic carbenes, phosphine, sulfonated phosphine, phosphite, phosphinite, phosphonite, ether, amine, amide, sulfoxide, carbonyl, nitrosyl, pyridine and thioether, wherein at least one of L or L<sup>1</sup> is a nucleophilic carbene. —

-- 25. (Amended) [The method of claim 22] A method of performing ring closing metathesis, said method comprising contacting a diterminal diene with a catalytic complex under conditions

appropriate, and for a time sufficient to produce a cyclic alkene, wherein the catalytic complex has the formula:



wherein

C<sup>1</sup>, C<sup>2</sup> and C<sup>3</sup> are sp<sup>2</sup>-hybridized carbons, wherein either or both of C<sup>1</sup> and C<sup>2</sup> are optionally absent;

M is selected from the group consisting of Os and Ru;

R and R<sup>1</sup> are independently selected from the group consisting of hydrogen, C<sub>1</sub>-C<sub>20</sub> alkyl, C<sub>2</sub>-C<sub>20</sub> alkenyl, C<sub>2</sub>-C<sub>20</sub> alkynyl, C<sub>2</sub>-C<sub>20</sub> alkoxy carbonyl, aryl, C<sub>1</sub>-C<sub>20</sub> carboxylate, C<sub>1</sub>-C<sub>20</sub> alkoxy, C<sub>2</sub>-C<sub>20</sub> alkenyloxy, C<sub>2</sub>-C<sub>20</sub> alkynyloxy, or aryloxy, each R and R<sup>1</sup> optionally being substituted with C<sub>1</sub>-C<sub>5</sub> alkyl, halogen, C<sub>1</sub>-C<sub>6</sub> alkoxy, or with a phenyl group substituted with halogen, C<sub>1</sub>-C<sub>5</sub> alkyl or C<sub>1</sub>-C<sub>5</sub> alkoxy;

X is an anionic ligand; and

L is a nucleophilic carbene; and

Ar is an aryl substituent, bonded to M by an η<sup>6</sup> bond.—

New claims 27-38 have been added, as indicated below:

-- 27. (New) The catalytic complex of claim 9, wherein at least one of the anionic ligands X and X<sup>1</sup> are independently selected from the group consisting of halide, carboxylate, alkoxy, aryloxy, and alkyl sulfonate.--

-- 28. (New) The catalytic complex of claim 27, wherein at least one of the anionic ligands is chloride.--

-- 29. (New) The catalytic complex of claim 9, wherein the nucleophilic carbene ligand comprises a carbene carbon further bonded to two heteroatoms having electronegativity greater than that of carbon, wherein the heteroatoms are independently selected from the group consisting of nitrogen, oxygen, and sulfur.--

-- 30. (New) The catalytic complex of claim 29, wherein the nucleophilic carbene ligand comprises a saturated or unsaturated 1,3-diheteroaromatic cyclic compound.--

-- 31. (New) The catalytic complex of claim 9, wherein the complex is linked to a solid support by means of a link between at least one of said anionic ligands and said solid support.--

-- 32. (New) The catalytic complex of claim 9, wherein the complex is linked to a solid support by means of a link between at least one of said nucleophilic carbenes and said solid support.--

-- 33. (New) The catalytic complex of claim 14, wherein the anionic ligand X is selected from the group consisting of halide, carboxylate, alkoxy, aryloxy, and alkyl sulfonate.--

-- 34. (New) The catalytic complex of claim 33, wherein the anionic ligand is chloride.--

-- 35. (New) The catalytic complex of claim 14, wherein the nucleophilic carbene ligand comprises a carbene carbon further bonded to two heteroatoms having electronegativity greater than that of carbon, wherein the heteroatoms are independently selected from the group consisting of nitrogen, oxygen, and sulfur.--

-- 36. (New) The catalytic complex of claim 35, wherein the nucleophilic carbene ligand comprises a saturated or unsaturated 1,3-diheteroaromatic cyclic compound.--

-- 37. (New) The catalytic complex of claim 14, wherein the complex is linked to a solid support by means of a link between said anionic ligand and said solid support.--

-- 38. (New) The catalytic complex of claim 14, wherein the complex is linked to a solid support by means of a link between said nucleophilic carbene and said solid support.--